

**Amendments to the Claims**

This listing of claims replaces all previous listings of claims.

1. (Currently amended) A method of diagnosing Crohn's disease in a subject, the method comprising

providing a test sample from a subject with digestive symptoms of Crohn's disease;

detecting a level of an IgA anti-GlcNAc ( $\beta$  1-4) GlcNAc ( $\beta$ ) antibody (ACCA) in said sample by binding of said IgA ACCA in said sample to a carbohydrate reagent comprising an isolated GlcNAc ( $\beta$  1-4) GlcNAc ( $\beta$ ) glycan; and

diagnosing Crohn's Disease in said subject by detection of an elevated level of said antibody IgA ACCA in said test sample relative to a control reference level sample.

2. (Currently amended) The method of claim 1, wherein said ~~method further comprises~~ ~~comparing levels of said specific anti-glycan antibody in said test sample to levels of said specific anti-glycan antibody in a control sample, wherein said control sample is selected from the group consisting of one or more individuals known to have or not to have a gastrointestinal disorder other than~~ control reference level is a level from one or more individuals without Crohn's disease.

3. (Currently amended) The method of claim ~~[[2]]~~1, wherein said control reference level ~~sample is a level~~ from one or more individuals with a gastrointestinal disorder that is irritable bowel syndrome or ulcerative colitis.

4. (Currently amended) The method of claim ~~[[2]]~~1, wherein said control reference level sample is a level from one or more individuals that do not have a gastrointestinal disorder.

5. (Currently amended) The method of claim 1, wherein said method further comprises detecting a level of ~~at least one of~~ an anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody (ALCA) ~~[[and]]~~ or an anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody in said sample, wherein said subject is assessed as having Crohn's disease if said ALCA or said polysaccharide  $\beta$ -D (1-3) Glucan antibody levels are elevated in said sample relative to a control reference level.

6. (Currently amended) The method of claim 1, wherein said method further comprises detecting a level of an anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody (ALCA) and an anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody in said sample, wherein said subject is assessed as having Crohn's disease if said ALCA and said polysaccharide  $\beta$ -D (1-3) Glucan antibody levels are elevated in said sample relative to a control reference level.

7. (Canceled)

8. (Currently amended) The method of claim 1, further comprising detecting in said test sample a level of an anti-Mannan ~~(ASCA)~~ antibody (ASCA), wherein the subject is assessed as having Crohn's disease if said anti-GlcNAc ( $\beta$  1-4) GlcNAc ( $\beta$ ) antibody (ACCA) and said anti-ASCA ~~antibody~~ levels are elevated in said sample relative to a control reference level.

9. (Currently amended) The method of claim 1, further comprising determining whether said test sample has anti-neutrophil cytoplasmic antibodies (ANCA), wherein the subject is assessed as having Crohn's Disease if said ~~anti-neutrophil cytoplasmic antibodies~~ (ANCA[D]) are absent ~~[[in]]~~from said sample.

10. (Currently amended) The method of claim 8, further comprising determining whether said test sample has ~~[[an]]~~ anti-neutrophil cytoplasmic antibodies (ANCA), wherein the subject is assessed as having Crohn's Disease if said ~~anti-neutrophil cytoplasmic antibodies~~ (ANCA[D]) are absent ~~[[in]]~~from said sample.

11. (Currently amended) The method of claim 1, wherein said method further comprises detecting a level of one, two, or three of anti-Man ( $\alpha$  1-3) Man ( $\alpha$ ) antibody, anti-Man ( $\alpha$  1-3)[Man ( $\alpha$  1-6)] Man ( $\alpha$ ) antibody, anti-Man ( $\alpha$  1-2) Man ( $\alpha$ ) antibody, anti-Man ( $\alpha$  1-6) Man ( $\alpha$ ) antibody (AMCA) or an anti-Mannan antibody (ASCA) ~~antibody~~ in said sample, wherein said subject is assessed as having Crohn's disease if the levels of each of said detected antibodies are elevated in said sample relative to a control reference level.

12. (Original) The method of claim 1, wherein said test sample is a biological fluid.

13. (Original) The method of claim 12, wherein said biological fluid is whole blood, serum, plasma, urine, or saliva.

14. (Previously presented) The method of claim 12, wherein said biological fluid is serum.

15. (Currently amended) The method of claim 5, further comprising determining an isotype of said anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody or said anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody in said sample ~~antibody or antibodies~~.

16. (Canceled)

17. (Currently amended) The method of claim 15, wherein said anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody or said anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody in said sample ~~antibody~~ is an IgA isotype antibody.

18. (Currently amended) The method of claim 15, wherein said anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody or said anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody in said sample ~~antibody~~ is an IgG isotype antibody.

19. (Currently amended) The method of claim 18, wherein said method further comprises detecting a level of an anti-Glc ( $\beta$ ) IgG antibody, an anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) IgG antibody, an anti-Glc ( $\beta$  1-4) Glc ( $\beta$ ) IgG antibody, an anti-GlcNAc ( $\beta$ ) 6-sulfate IgG antibody, or an anti-Xylan IgG antibody in said sample, wherein said subject is assessed as having Crohn's disease if the levels of each of said detected antibodies are elevated in said sample relative to a control reference level.

20. (Currently amended) The method of claim [[5]]1, wherein said ~~specific anti-glycan~~ antibody ACCA is identified detected with a fluorescent antibody.

21. (Currently amended) The method of claim [[5]]1, wherein said ~~specific anti-glycan~~ antibody ACCA is identified detected with an enzyme-linked immunoabsorbent assay (ELISA).

22. (Currently amended) A method of diagnosing Crohn's disease in a subject, the method comprising

providing a test sample from a subject with digestive symptoms of Crohn's disease;  
detecting a level of an anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody (ALCA) in said sample by binding of said ALCA in said sample to a carbohydrate reagent comprising an isolated Glc ( $\beta$  1-3) Glc ( $\beta$ ) glycan; and

diagnosing Crohn's Disease in said subject by detection of an elevated level of said antibody in said test sample relative to a control reference level sample.

23. (Currently amended) The method of claim 22, wherein said method comprises detecting a level of an ~~IgG anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody~~ ALCA in said sample.

24. (Currently amended) The method of claim 23, wherein said method further comprises detecting a level of an IgG anti-Man ( $\alpha$  1-3) Man ( $\alpha$ ) [ $\alpha$ ] antibody in said sample, wherein said subject is assessed as having Crohn's disease if said IgG anti-Man ( $\alpha$  1-3) Man ( $\alpha$ ) antibody levels are elevated in said sample relative to a control reference level.

25. (Currently amended) The method of claim 22, wherein said method comprises detecting a level of an IgG ~~anti~~-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody (ALCA) and an IgG anti-Man ( $\alpha$  1-3) Man ( $\alpha$ ) antibody (AMCA) in said sample, wherein said subject is assessed as having Crohn's disease if said IgG ALCA and said IgG AMCA levels are elevated in said sample relative to a control reference level.

26. (Currently amended) The method of claim 22, wherein said method further comprises detecting a level of an IgG anti-Mannan antibody (ASCA) or an IgA anti-[[ ]]Mannan antibody (ASCA) in said sample, wherein said subject is assessed as having Crohn's Disease if ~~said anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody (ALCA)~~, said IgG ASCA anti-Mannan, or said IgA ASCA anti-Mannan antibody is elevated in said sample relative to a control reference level.

27. (Currently amended) The method of claim 26, wherein said method comprises detecting a level of an IgG ~~anti-Mannan antibody~~ ASCA in said sample.

28. (Currently amended) The method of claim 26, wherein said method comprises [[s]] detecting a level of an IgA ~~anti-Mannan antibody~~ ASCA in said sample.

29. (Currently amended) The method of claim 26, wherein said method further comprises determining whether said sample has anti-neutrophil cytoplasmic antibodies (ANCA), wherein said subject is assessed as having Crohn's Disease if said ANCA are absent [[in]]from said sample.

30. (Currently amended) A method of differentially diagnosing Crohn's disease or inflammatory bowel disease in a subject with digestive symptoms of Crohn's disease or inflammatory bowel disease, the method comprising

providing a test sample from the subject; [[and]]

detecting a level of an anti-neutrophil cytoplasmic antibody (ANCA) in said sample;

detecting a level of an IgG anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody (ALCA) in said sample by

binding of said ALCA in said sample to a carbohydrate reagent comprising an

isolated Glc ( $\beta$  1-3) Glc ( $\beta$ ) glycan;

the method further comprising identifying a specific anti-Mannan antibody (ASCA) antibody

selected from the group consisting of

IgG ASCA and

IgA ASCA,

wherein absence of ANCA and presence of at least one of said IgG ALCA anti-Glc( $\beta$  1-3)-Glc( $\beta$ ), IgG ASCA, [[and]]or IgA ASCA antibodies in said test sample indicates the subject has Crohn's disease, and

wherein the subject is assessed as having inflammatory bowel disease if ANCA is present and at least one of said IgG ALCA anti-Glc( $\beta$  1-3)-Glc( $\beta$ ), IgG ASCA, [[and]]or IgA ASCA antibodies are present in said test sample.

Claims 31-42 (Canceled)

43. (Currently amended) The method of claim 22, wherein said method further comprises ~~comparing levels of said at least one specific anti-glycan antibody in said test sample to levels of said at least one specific anti-glycan antibody in a control sample, wherein said control sample is selected from the group consisting of one or more individuals known to have or not to have a gastrointestinal disorder other than~~ control reference level is a level from one or more individuals without Crohn's disease.

44. (Currently amended) The method of claim ~~[[43]]~~22, wherein said control reference level sample is a level from one or more individuals with a gastrointestinal disorder that is irritable bowel syndrome or ulcerative colitis.

45. (Currently amended) The method of claim ~~[[43]]~~22, wherein said control reference level sample is a level from one or more individuals that do not have a gastrointestinal disorder.

46. (Currently amended) The method of claim 22, wherein said method further comprises detecting a level of ~~at least one~~ of an anti-GlcNAc ( $\beta$  1-4) GlcNAc ( $\beta$ ) antibody (ACCA) ~~[[and]]~~ or an anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody in said sample, wherein said subject is assessed as having Crohn's disease if said ACCA or said anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody levels are elevated in said sample relative to a control reference level.

47. (Currently amended) The method of claim 22, wherein said method further comprises detecting a level of an anti-GlcNAc ( $\beta$  1-4) GlcNAc ( $\beta$ ) antibody (ACCA) and an anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody in said sample, wherein said subject is assessed as



having Crohn's disease if said ACCA and said anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody levels are elevated in said sample relative to a control reference level.

48. (Currently amended) The method of claim 22, further comprising detecting a level of anti-[[ ]]Mannan antibody (ASCA) ~~antibody~~ in said sample, wherein the subject is assessed as having Crohn's disease if said ~~anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody (ALCA) or said anti-ASCA antibody~~ is elevated in said sample relative to a control reference level.

49. (Currently amended) The method of claim 22, further comprising determining whether said test sample has anti-neutrophil cytoplasmic antibodies (ANCA), wherein the subject is assessed as having Crohn's Disease if said ~~anti-neutrophil cytoplasmic antibodies (ANCA[[D]])~~ are absent ~~[[in]]~~ from said sample.

50. (Currently amended) The method of claim 48, further comprising determining whether said test sample has ~~[[an]]~~ anti-neutrophil cytoplasmic antibodies (ANCA), wherein the subject is assessed as having Crohn's Disease if said ~~anti-neutrophil cytoplasmic antibodies {ANCA[D]}~~ are absent ~~[[in]]~~ from said sample.

51. (Previously presented) The method of claim 22, wherein said test sample is a biological fluid.

52. (Previously presented) The method of claim 51, wherein said biological fluid is whole blood, serum, plasma, urine, or saliva.

53. (Previously presented) The method of claim 51, wherein said biological fluid is serum.

54. (Currently amended) The method of claim 46, further comprising determining an isotype of said ALCA and said detected ACCA or said detected anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody in said sample ~~antibody or antibodies~~.

55. (Canceled)

56. (Currently amended) The method of claim 54, wherein said detected ACCA or said detected anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody in said sample ~~antibody~~ is an IgA isotype antibody.

57. (Currently amended) The method of claim 54, wherein said ALCA and said detected ACCA or said detected anti-polysaccharide  $\beta$ -D (1-3) Glucan antibody in said sample ~~antibody~~ is an IgG isotype antibody.

58. (Currently amended) The method of claim 57, wherein said method further comprises detecting a level of an anti-Glc ( $\beta$ ) IgG antibody, an anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) IgG antibody, an anti-Glc ( $\beta$  1-4) Glc ( $\beta$ ) IgG antibody, an anti-GlcNAc ( $\beta$ ) 6-sulfate IgG antibody, or an anti-Xylan IgG antibody in said sample, wherein said subject is assessed as having Crohn's

disease if the levels of each of said detected antibodies are elevated in said sample relative to a control reference level.

59. (Currently amended) The method of claim [[46]] 22, wherein said ALCA ~~specific~~ anti-glycan antibody is detected ~~identified~~ with a fluorescent antibody.

60. (Currently amended) The method of claim [[46]] 22, wherein said ~~specific anti-glycan antibody~~ ALCA is detected ~~identified~~ with an enzyme-linked immunoabsorbent assay (ELISA).

61. (Currently amended) The method of claim 22, wherein said method further comprises detecting a level of said anti-Glc ( $\beta$  1-3) Glc ( $\beta$ ) antibody (ALCA), and one, two, or three of anti-Man ( $\alpha$  1-3) Man ( $\alpha$ ) antibody, anti-Man ( $\alpha$  1-3)[ Man ( $\alpha$  1-6)] Man ( $\alpha$ ) antibody, anti-Man ( $\alpha$  1-2) Man ( $\alpha$ ) antibody, anti-Man ( $\alpha$  1-6) Man ( $\alpha$ ) antibody (AMCA) or an anti-[[ ]]Mannan antibody (ASCA ) antibody in said sample, wherein said subject is assessed as having Crohn's disease if the levels of each of said detected antibodies are elevated in said sample relative to a control reference level.

62. (Canceled)

63. (Previously presented) The method of claim 22, further comprising determining an isotype of said antibody, wherein said antibody is an IgA isotype antibody.

64. (Currently amended) The method of claim 1, further comprising  
detecting a level of an anti-mannan antibody (ASCA) in said sample by binding of said  
ASCA in said sample to a carbohydrate reagent comprising an isolated mannan and  
diagnosing Crohn's Disease in said subject by detection of an elevated level of said anti-  
mannan antibody in said test sample relative to a control reference level sample.

65. (Currently amended) The method of claim 1, further comprising  
detecting a level of an anti-Glc ( $\beta$  1-3) Glc  $[[\text{(B)}]](\beta)$  antibody (ALCA) in said sample by  
binding of said ALCA in said sample to a carbohydrate reagent comprising an isolated Glc ( $\beta$  1-  
3) Glc  $[[\text{(B)}]](\beta)$  glycan and  
diagnosing Crohn's Disease in said subject by detection of an elevated level of said anti-  
Glc ( $\beta$  1-3) Glc  $[[\text{(B)}]](\beta)$  antibody in said test sample relative to a control reference level  
sample.

66. (Currently amended) The method of claim 1, further comprising  
detecting a level of an anti-Man( $\alpha$  1,3)Man( $\alpha$ ) antibody (AMCA) in said sample by  
binding of said AMCA in said sample to a carbohydrate reagent comprising an isolated Man( $\alpha$   
1,3)Man( $\alpha$ ) glycan and  
diagnosing Crohn's Disease in said subject by detection of an elevated level of said anti-  
Man( $\alpha$  1,3)Man( $\alpha$ ) antibody in said test sample relative to a control reference level sample.

67. (Currently amended) A method of diagnosing Crohn's disease in a subject, the method comprising providing a test sample from a subject with digestive symptoms of Crohn's disease;

detecting a level of an anti-GlcNAc ( $\beta$  1-4) GlcNAc ( $\beta$ ) antibody (ACCA) in said sample by binding of said ACCA in said sample to an isolated GlcNAc ( $\beta$  1-4) GlcNAc ( $\beta$ ) ~~glycan~~ on a solid phase;

detecting a level of an anti-Glc( $\beta$  1-3) Glc ( $\beta$ ) antibody (ALCA) in said sample by binding of said ALCA in said sample to an isolated Glc( $\beta$  1-3) Glc ( $\beta$ ) ~~glycan~~ on a solid phase;

detecting a level of an anti-mannan antibody (ASCA) in said sample by binding of said ASCA in said sample to an isolated mannan ~~glycan~~ on a solid phase; and

detecting a level of an anti-Man( $\alpha$ 1,3)Man( $\alpha$ ) antibody (AMCA) in said sample by binding of said AMCA in said sample to an isolated Man( $\alpha$ 1,3)Man( $\alpha$ ) ~~glycan~~ on a solid phase;

wherein elevated levels of at least two of said antibodies in said test sample relative to a control reference level sample indicates the subject has Crohn's disease.

68. (Currently amended) The method of claim 67, wherein elevated levels of at least three of said antibodies in said test sample relative to a control reference level sample indicates the subject has Crohn's disease.

69. (Currently amended) The method of claim 67, wherein said GlcNAc ( $\beta$  1-4) GlcNAc ( $\beta$ ) ~~glycan~~, said Glc( $\beta$  1-3) Glc ( $\beta$ ) ~~glycan~~, said mannan ~~glycan~~, and said Man( $\alpha$ 1,3)Man( $\alpha$ ) ~~glycan~~ are attached via a linker to said solid phase.

70. (Currently amended) The method of claim 67, wherein said GlcNAc ( $\beta$  1-4) GlcNAc ( $\beta$ ) ~~glycan~~, said Glc( $\beta$  1-3) Glc ( $\beta$ ) ~~glycan~~, said mannan ~~glycan~~, and said Man( $\alpha$ 1,3)Man( $\alpha$ ) ~~glycan~~ are covalently attached to said solid phase.